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IDAHO DEPARTMENT OF HEALTH & WELFARE

Bureau of Community and Environmental Health

Health Effects of EDB in Your Drinking Water: Fort Hall Reservation and North Bannock County, Idaho

Was EDB detected in ground water wells?

In 1990, the toxic chemical ethylene dibromide (EDB) was detected in a private well on the Fort Hall Indian Reservation. Ground water investigations conducted in 1993, 1994, and 1996 indicated the EDB contamination covered 62 square miles of the reservation and part of north Bannock County, Idaho (see map on back page).

The US Environmental Protection Agency (EPA) set a Maximum Contaminant Level (MCL) for EDB. The MCL is the maximum amount of a chemical the EPA will permit in water delivered to the public. The MCL for EDB is 0.05 parts of EDB per billion parts of water. (One part per billion is a very small amount, equivalent to one second in 32 years or one penny out of 10 million dollars.) As of June, 1996 there were 109 wells on the reservation with detectable levels of EDB ranging from 0.02 ppb to 15 ppb. Private wells are not regulated by the EPA. To date, private wells outside of the reservation have not been tested for EDB.

What is EDB?

EDB is a manufactured, toxic chemical. It is slightly soluble in water, meaning that it will dissolve somewhat. EDB was used in agriculture as a pesticide in row crops and orchards until 1984 when its use as a pesticide was banned by EPA. It was also used in leaded gasoline and as an aviation fuel additive. EDB is still used as a solvent, a waterproofing agent, and an additive in dyes.

Can EDB harm my health?

Toxic chemicals such as EDB can only harm you if you come into contact with them. This is called exposure. You can be exposed to EDB in your well water by drinking the contaminated water or eating food cooked in the contaminated water. You can also be exposed to EDB by washing, showering, or bathing in contaminated water as well as breathing in contaminated water vapor or steam.

Whether or not EDB can harm your health also depends on the amount of EDB to which you are exposed and how long you are exposed. Exposure to EDB in water above the MCL over a lifetime can cause adverse health effects.

What are the health effects of EDB?

At levels detected in the ground water beneath Fort Hall and part of north Bannock County, it is unlikely that EDB will cause non-cancer health effects from chronic (one year or more) exposure. Chronic health effects from breathing EDB include irritation of the nose, throat, and lungs, loss of appetite, headache, and depression. Chronic ingestion of EDB in water above the MCL can damage the nervous system, heart, liver, and kidneys over a period of 30 years.

EDB is considered a probable human carcinogen by EPA. Exposure to EDB above the MCL for 30 years greatly increases the risk of developing cancer. Animal tests show that EDB can cause cancer in animals through all three routes of exposure: skin contact, breathing, and eating or drinking.

Individuals taking Antabuse (disulfiram), a medication used to reduce alcohol use, are more sensitive to the toxic effects of EDB.

Exposure to high doses of EDB can cause liver, stomach, adrenal cortex, and reproductive system damage. It can also cause severe mucous membrane, eye, and skin irritation. These effects are for short term or acute (less than 2 weeks) exposures to high concentrations of EDB. Levels of EDB under Fort Hall and north Bannock County are not high enough to cause these types of health effects.

What happens to EDB when it enters the ground water?

EDB is heavier than water. That means EDB will settle to the bottom of the ground water aquifer. EDB has a half-life of 37 days to 8 years depending on soil conditions. A half-life is the amount of time it takes for the amount of a substance to be reduced by 50%. This means that EDB in ground water could contaminate water for decades depending on the extent of EDB contamination.

How did EDB get into the ground water?

It is not known how EDB entered the ground water beneath Fort Hall and part of north Bannock County. The source of the spill has not yet been found. The amount of EDB in ground water in this area is also unknown.

The report titled *Observations of Ethylene Dibromide Occurrence on the Fort Hall Indian Reservation, July 1996* stated that EDB concentrations in Bingham county are higher than in Bannock county. The report also stated that EDB levels in Bingham county greatly decreased from 1990 to 1996.

What has been done to correct the problem?

The Indian Health Service (IHS) and US Department of Housing and Urban Development initially supplied granulated activated carbon filters to well owners who had wells with EDB concentrations above the MCL. The filters were supposed to last for 18 months to 2 years. The reported life of the filters at this site was 7 months. Well owners are responsible for maintaining and replacing their filters. Failure to properly maintain or replace filters will lead to renewed EDB exposure.

The Shoshone-Bannock Tribes, with assistance from EPA and IHS, installed new community water supply wells outside of the EDB contamination area. However, the new water system does not serve all households within the contaminated area. Although the Tribes encouraged all homes to hook up to the new system, some private well owners elected not to hook up to the new water supply system.

How do I know if my well contains EDB?

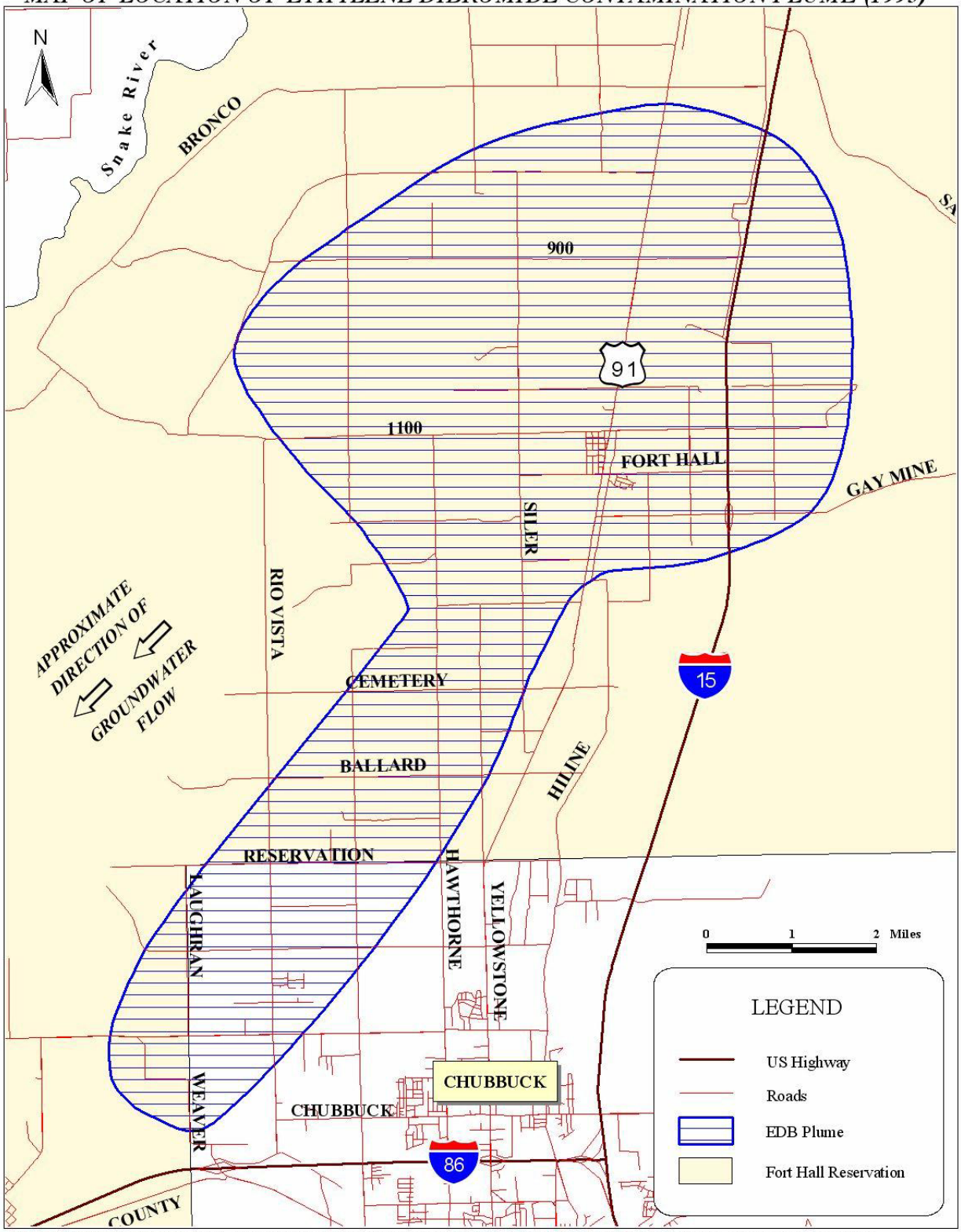
If your well lies in or near the contamination plume shown on the next page, it is possible that your well may contain EDB. An analytical laboratory can test your water for the presence or absence of EDB. Look in the yellow pages of your telephone directory under “Laboratories—Testing” to find a qualified lab. The cost for testing your well can range from $20 to $350, depending on the laboratory and the type of contaminants you wish to have analyzed.

What can I do if my well contains EDB?

If your well has been fitted with a granulated activated carbon filter, it should be maintained regularly. Check with the manufacturer or look under “Water Treatment Equipment” in the yellow pages to locate a supplier. If your well does not have a filter, it is recommended that you obtain one for your well in order to treat the water for your entire household. Filtration systems range from $300 to $3,000 and replacement filters cost between $6 and $70 depending on the company and type of filtration system. If possible, you may wish to connect to a public water system. Public water systems are regulated and must test their water to insure the health and safety of their customers.

Other options for reducing EDB exposure from contaminated water include: reducing water flow into the house, reduce time spent in the shower or bath, installation of an exhaust fan above sinks or showers, and purchasing individual carbon filters for each water fixture.

MAP OF LOCATION OF ETHYLENE DIBROMIDE CONTAMINATION PLUME (1995)



*INFORMATION OBTAINED FROM: OBSERVATIONS OF ETHYLENE DIBROMIDE OCCURRENCE ON THE FORT HALL INDIAN RESERVATION FORT HALL, IDAHO, 1996

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